

CLAIMS

1. Silk thread containing spider thread protein,
characterized by being produced by a transgenic silkworm
5 possessing a pair of fibroin H chain genes.

2. Silk thread containing spider thread protein
according to claim 1, characterized in that said silk thread
essentially retains the basic structure of silk thread
fibroin H chain protein.

10 3. Silk thread according to claim 1 or 2,
characterized in that the spider thread protein is dispersed
in the fibroin protein.

4. Silk thread according to any one of claims 1 to
3, characterized in that the spider thread protein is fused
15 with a polypeptide contained in the fibroin H chain protein.

5. Silk thread according to claim 4, characterized
in that the spider thread protein is inserted between the N-
terminal portion and C-terminal portion of the fibroin H
chain protein, and is disulfide bonded with the fibroin L
20 chain protein via a cysteine contained in the C-terminal
portion.

6. Silk thread according to any one of claims 1 to
5, wherein the spider thread protein content is 0.1-25 wt%.

7. Silk thread according to claim 6, wherein the
25 spider thread protein content is 1-15 wt%.

8. Silk thread according to claim 7, wherein the
spider thread protein content is 1-10 wt%.

9. Silk thread according to any one of claims 1 to
8, characterized in that the spider thread protein includes
the peptide listed as SEQ ID NO: 1, or the peptide listed as
SEQ ID NO: 1 with a deletion, substitution or addition of
one or more amino acids and having the properties of spider
thread protein.

10 10. Silk thread according to claim 9,
characterized by comprising spider thread protein with 3-30
repeats of the peptide of claim 9.

11. Silk thread according to claim 10,
characterized by comprising spider thread protein with 4-16
repeats of the peptide of claim 9.

12. Silk thread according to any one of claims 1
to 8, characterized in that the spider thread protein
includes the peptide listed as SEQ ID NO: 2, or the peptide
listed as SEQ ID NO: 2 with a deletion, substitution or
addition of one or more amino acids and having the
properties of spider thread protein.

13. Silk thread according to claim 12,
characterized by comprising spider thread protein with 3-30
repeats of the peptide of claim 12.

14. Silk thread according to claim 13,
characterized by comprising spider thread protein with 4-16
repeats of the peptide of claim 12.

15. Silk thread according to any one of claims 1
to 8, characterized in that the spider thread protein

contains both the peptide according to claim 9 and the peptide according to claim 12.

16. Silk thread according to any one of claims 5 to 15, characterized in that the C-terminal portion of the fibroin H chain protein fused with the spider thread protein is the peptide of SEQ ID NO: 3 or the peptide of SEQ ID NO: 3 having a deletion, substitution or addition of one or more amino acids and having 2 or 3 cysteines.

17. Silk thread according to any one of claims 5-16, characterized in that the N-terminal portion of the fibroin H chain protein fused with the spider thread protein is the peptide of SEQ ID NO: 4 or the peptide of SEQ ID NO: 4 having a deletion, substitution or addition of one or more amino acids, and is a peptide such that the gene coding for said peptide retains the function of enhancing promoter-dependent exogenous protein expression.

18. Silk thread according to any one of claims 1 to 17, wherein the spider thread protein is not fused to a selection marker protein.

19. A transgenic silkworm possessing a pair of fibroin H chain genes and producing silk thread according to any one of claims 1 to 18 wherein the gene coding for spider thread protein is transferred into a region other than the pair of fibroin H chain genes.

20. A transgenic silkworm according to claim 19, characterized by having a fibroin H chain gene promoter for

expression of spider thread protein in the gene recombinant silkworm.

21. A transgenic silkworm according to claim 19, characterized by having a fibroin H chain gene promoter and its upstream region for expression of spider thread protein in the gene recombinant silkworm.

22. A transgenic silkworm according to claim 20 or 21, characterized in that the entirety or a portion of the full-length first exon-first intron-second exon region of the fibroin H chain gene is linked downstream from the fibroin H chain promoter.

23. A method for producing a transgenic silkworm according to any one of claims 19 to 22, which utilizes a transposon.

24. A method for producing a transgenic silkworm according to claim 23, characterized in that the transposon is piggyBac transposon.

25. A method for producing silk thread characterized by using a transgenic silkworm according to any one of claims 19 to 22.

26. A textile employing silk thread according to any one of claims 1 to 18.